

## A MERGED CHARGE PUMP

ABSTRACT

A charge pump circuit for generating various pumped voltages includes a first charge pump including a plurality of first charge pump stages responsive to a first set of clock signals and having threshold voltage cancellation circuitry, a second charge pump including a plurality of second charge pump stages responsive to a second set of clock signals different from the first clock signals, and a switching circuit configured to selectively connect the second charge pump in series between the first charge pump and a voltage rail in response to a mode signal (MODE). For some embodiments, a plurality of the charge pump circuits can be selectively connected in parallel in response to corresponding select signals to generate various drive currents.